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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte SAMUEL ALAN JOHNSON

Appeal 2009-004596
Application 10/771,935
Technology Center 3600

Decided: January 28, 2010

Before: JENNIFER D. BAHR, STEVEN D.A. MCCARTHY, and
MICHAEL W. O'NEILL, *Administrative Patent Judges.*

BAHR, *Administrative Patent Judge.*

DECISION ON APPEAL

STATEMENT OF THE CASE

Samuel Alan Johnson (Appellant) appeals under 35 U.S.C. § 134 (2002) from the Examiner's decision rejecting claims 1-4 and 6. Claims 7 and 8 have been withdrawn from consideration by the Examiner. We have jurisdiction over this appeal under 35 U.S.C. § 6 (2002).

The Invention

Appellant's claimed invention is directed to a deployable and retractable space frame. Spec. 1.

Claim 1, reproduced below, is illustrative of the claimed invention.

1. A space frame structure capable of deployment or retraction comprising multiple truss elements, multiple beam elements forming each one of said multiple truss elements, and each one of said truss elements being capable of existing in either a straight and rigid condition, or existing in a curved and flexible condition, with opposed ends of said truss elements connected to at least two other structural elements desired to be held spaced apart in a prescribed orientation.

The Rejections

Appellant seeks review of the Examiner's rejection under 35 U.S.C. § 112, second paragraph of claims 1, 2, and 4 as being indefinite, and under 35 U.S.C. § 102(b) of claims 1, 3, 4, and 6¹ as anticipated by US 5,003,736 to Okazaki (issued Apr. 2, 1991).

¹ Appellant lists claims 1-6 as subject to the § 102 rejection, but the Examiner withdrew the § 102 rejection of claims 2 and 5 set forth in the final Office action mailed June 19, 2007. *See* Ans. 2 and 4.

SUMMARY OF DECISION

We REVERSE.

ISSUES

The Examiner concluded that claims 1, 2, and 4 are indefinite under § 112, second paragraph. Ans. 3-4. With respect to claim 1, the Examiner concluded that the "other structural elements" limitation is indefinite because it is unclear whether each opposed truss element end is connected to at least two "other" elements, or if the truss element, as a whole, is connected to at least two "other" elements. *Id.* Further, the Examiner concluded that it is unclear what an "other structural element" is, whether the "other structural element" may be a "ring" as recited in claim 4, and whether each of the "other" elements is the same type of "other" element, or if they could be different "other" elements. *Id.* Appellant argues that a person of ordinary skill in the art would understand claim 1. Appeal Br. 4.

With respect to claim 2, the Examiner found that the "single beams" element is not positively recited, such that it is unclear if the "single beams" are part of the claim. Ans. 3. Appellant argues that there is no requirement that the "single beams" be positively recited, and that it is clear that the structure of the hinge is defined by its ability to connect "single beams" to the "single long beam." Appeal Br. 3.

The Examiner found that claim 4 further requires the truss elements to be connected to a ring, making it unclear if the ring is an "other" element for purposes of counting the number of "other" elements of claim 1. Ans. 3-4. Further, the Examiner concluded that it is unclear what constitutes a

"neighboring" truss element. Ans. 4. Appellant argues that a person of ordinary skill in the art would understand claim 4. Appeal Br. 4.

The Examiner found that Okazaki's deployable and collapsible structure having longerons separated by radial spacers anticipates the deployable and retractable space frame having multiple beam elements forming truss elements of claim 1. Ans. 4-5. In particular, the Examiner found that each arm of the spacers can be considered part of a different truss element along with the longeron to which the arm is attached. Ans. 6-7. Appellant argues that Okazaki describes each spacer as an *integral* structure such that the Examiner has characterized Okazaki's longerons and spacers as "truss elements" in a manner unrecognized in the art. Appeal Br. 6; Reply Br. 3-4. Appellant does not separately argue dependent claims 3, 4, and 6. Therefore, claims 3, 4, and 6 stand or fall with claim 1. 37 C.F.R. § 41.37(c)(1)(vii) (2007).

Therefore, the issues presented in this appeal are:

- (1) Has Appellant demonstrated that the Examiner erred in concluding that claims 1, 2, and 4 are indefinite under § 112, second paragraph? In particular, would the metes and bounds of claim 1 be clear to one of ordinary skill regarding what constitutes "other structural elements" and how many "other structural elements" are attached to each end of the truss elements? Would the metes and bounds of claim 2 be clear to one of ordinary skill in the art regarding the hinge for connecting "single beams"? Would the metes and bounds of claim 4 be clear to one of ordinary skill in the art regarding "neighboring ones of said truss elements"?

- (2) Has Appellant demonstrated that the Examiner erred in finding that Okazaki's truss, comprising multiple longerons supported by multiple radial spacers, anticipates the "multiple beam elements" forming "multiple tress elements" limitation of claim 1? In particular, would one of ordinary skill consider each arm of one of Okazaki's unitary spacers to be part of a different truss element that also comprises the longeron to which the arm is connected?

FACTS PERTINENT TO THE ISSUES

(FINDINGS-OF-FACT (FF))

- FF1 Appellant's Specification describes a device whereby multiple truss elements (20a, 20b, 20c, etc.) are connected to and support multiple rings (11a, 11b, 12) at opposite ends of the truss elements. *See, e.g.,* fig. 4e. Further, the ends of the truss elements include spherical ball joint assembly 23, as well as unlabeled objects such as the pins and attachment structure that connects the joint assembly 23 to the rings. Spec. 3, fig. 3A.
- FF2 One of ordinary skill in the art would understand that "neighboring" elements are elements that are next to each other, given the plain meaning of "neighbor," which is "a person or thing near or next to another." *Collins English Dictionary* (2000).
- FF3 Okazaki describes separate and distinct spacers 5 and longerons 3 forming a truss connecting two structural elements 1 and 2. Col. 1, ll. 36-59, fig. 10. Spacers 5 are integral, unitary structures with three arms, each arm attached perpendicularly to one of the three longerons

3 and serving to hold the longerons 3 in a triangle configuration. Col. 1, ll. 45-57, fig. 10.

FF4 The ordinary and customary meaning of a "truss element" to a person of ordinary skill in the art is a beam-like one-dimensional component of a truss, subject to axial loads between two nodes of the truss. *See, e.g.,* F. Merritt, ed., *Standard Handbook for Civil Engineers* 6-33 (McGraw-Hill 1976). Together, one of Okazaki's longerons and its connected spacer arms form a *two*-dimensional structure interconnecting *several* nodes subject to axial *and* transverse forces. *See* FF3. Therefore, one of ordinary skill in the art would not consider a longeron and its connected spacer arms to constitute a "truss element." Further, even if a person of ordinary skill in the art would consider a broader view of "truss element," such as to consider a "truss element" a particular sub-assembly of a truss, a longeron and connected spacer arms would not be considered part of the same truss element. The spacers and longerons provide support for differently-oriented forces and thus serve different purposes. *See* FF3, noting longerons provide axial support between structures 1 and 2, while the spacers provide lateral support with respect to the longerons to keep the longerons from bending away from one another. In addition, even under this broad view, a longeron with several attached arms (one from each spacer) would not logically appear to create a "truss element" apart from the remaining arms of each truss element, as the arms do not support the longerons by being attached to the longeron alone, but by all three arms being attached to all three longerons. As

such, one of ordinary skill in the art might consider the longerons and spacers as part of separate truss elements.

PRINCIPLES OF LAW

"For a prior art reference to anticipate in terms of 35 U.S.C. § 102, every element of the claimed invention must be identically shown in a single reference." *Diversitech Corp. v. Century Steps, Inc.*, 850 F.2d 675, 677 . . . (Fed.Cir.1988). These elements must be arranged as in the claim under review, *Lindemann Maschinenfabrik v. American Hoist & Derrick Co.*, 730 F.2d 1452, 1458 . . . (Fed.Cir.1984), but this is not an "ipsissimis verbis" test, *Akzo N.V. v. United States Int'l Trade Comm'n*, 808 F.2d 1471, 1479 & n. 11 . . . (Fed.Cir.1986), *cert. denied*, 482 U.S. 909. . . (1987).

In re Bond, 910 F.2d 831, 832-33 (Fed. Cir. 1990).

ANALYSIS

Issue (1) - Indefiniteness of Claims 1, 2, and 4

Appellant's argument that a person of ordinary skill in the art would understand claim 1 is persuasive. *See* Appeal Br. 4. The "other structural elements" limitation is not indefinite in context with the rest of claim 1. The "other" elements are "desired to be held spaced apart," such that it would not make sense that the "other" elements would both be attached to the same end of the truss element because then they could not be spaced apart. Therefore, it is clear that "other" elements are merely the objects attached at either end of the truss structure. *See, e.g.*, FF1 (noting the truss elements spacing apart rings). The fact that the claim does not limit the scope of what the "other

elements" are or define them as being either the same or different types of "other" elements is a matter of breadth, not indefiniteness. *See In re Johnson*, 558 F.2d 1008, 1016 n.17 (CCPA 1977); *In re Miller*, 441 F.2d 689, 693 (CCPA 1971); and *In re Gardner*, 427 F.2d 786, 788 (CCPA 1970). Thus, the claim merely requires that the "other" elements be structures of unspecified nature that are connected to the ends of the truss elements.

Appellant's argument for claim 2 that there is no requirement that the "single beams" be positively recited and that it is clear that the structure of the hinge is defined by its ability to connect "single beams" to the "single long beam" is persuasive. *See* Appeal Br. 3. Claim 2 does not positively require "one or more single beams." Instead, claim 2 recites a hinge "for connecting" the single long beam "to one or more single beams." The structure of the hinge would be clear to one of ordinary skill in the art in that it must be a structure capable of connecting the previously recited single long beam to one or more single beams.

Appellant's argument that a person of ordinary skill in the art would understand claim 4 is persuasive. *See* Appeal Br. 4. The Specification clearly depicts the ends of the truss elements as supporting and separating rings. FF1. Thus, the Specification provides support for the rings being connected to the ends of the truss elements. *Id.* Further, the Specification provides support for the rings being connected to the ends of the truss elements in addition to the "other structural elements" of claim 1, contrary to the Examiner's assertion. *See id.*, noting the "other structural elements" could be the ball joints and associated attachment hardware. The fact that the claim does not limit the rings to be one of the "other structural elements"

or to a structure in addition to the "other structural elements" is a matter of breadth, not indefiniteness. *See, e.g., In re Johnson*, 558 F.2d at 1016 n.17. Further, one of ordinary skill in the art would understand that "neighboring" truss elements are truss elements that are next to each other, given the plain meaning of "neighbor." FF2. The claim and Specification do not use "neighbor" in an uncommon or particular manner such as to cast doubt that "neighbor" means anything other than its plain meaning. That the exact positioning of each truss element in relation to a neighboring truss element is not precisely defined is a matter of breadth, not indefiniteness.

Issue (2) - Anticipation of Claim 1

Appellant's argument that the Examiner labels the longerons and radial spacers as beams and truss elements in a manner that is unrecognized in the structural arts is persuasive. *See* Reply Br. 3-4. While anticipation does not require an identity of language, every element of the claim must be shown and arranged as in the claim. *See In re Bond*, 910 F.2d at 832-33. The Examiner's rejection relies on separating the individual arms of the radial spacers in Okazaki into three beams, each beam belonging to a separate truss element along with a longeron. Ans. 3, 6-7.

Claim 1 requires that multiple beam elements form each truss element. In Okazaki, the spacers and longerons form a truss, but the spacers do not form any part of the longerons. FF3. Instead, each spacer is a separate, unitary structure that supports all three longerons equally. *Id.* One of ordinary skill in the art would not consider the Examiner's finding of the claimed "truss element" made of multiple beams in Okazaki reasonable. *See* FF4; *Scripps Clinic & Research Found. v. Genentech Inc.*, 927 F.2d 1565,

1576 (Fed. Cir. 1991) (anticipation requires "no difference between the claimed invention and the reference disclosure, *as viewed by a person of ordinary skill* in the field of the invention") (emphasis added). The Examiner's interpretation of multiple spacer arms along with a longeron constituting a "truss element" would not be shared by a person of ordinary skill in the art because the Examiner's so-called "truss element" is a two-dimensional object subject to axial and transverse loads between multiple nodes, whereas one of ordinary skill in the art would understand a "truss element" to mean a one-dimensional object only subject to axial loads between two nodes. FF4. Thus, the Examiner's reading of multiple beams forming multiple truss elements, as recited in claim 1, requires a construction of "truss element" not recognized in the art.

CONCLUSIONS

- (1) Appellant has demonstrated that the Examiner erred in concluding that claims 1, 2, and 4 are indefinite under § 112, second paragraph. In particular, the metes and bounds of claim 1 would be clear to one of ordinary skill in the art regarding the identity of "other structural elements" and that there are two or more "other structural elements" attached to the ends of the truss elements. The metes and bounds of claim 2 would be clear to one of ordinary skill in the art because the reference to "single beams" is not a positive recitation of "single beams," but rather is used to describe the functional capabilities of the hinge. The metes and bounds of claim 4 would be clear to one of ordinary skill in the art because the "neighboring ones of said truss elements" are "neighbors" under the plain meaning of the term.

- Therefore, we reverse the Examiner's decision to reject claims 1, 2, and 4 under 35 U.S.C. § 112, second paragraph.
- (2) Appellant has demonstrated that the Examiner erred in finding that Okazaki's truss, comprising multiple longerons supported by multiple radial spacer arms, anticipates the "multiple beam elements" forming "multiple tress elements" limitation of claim 1 because the Examiner's reading of the claim language on the structure of Okazaki requires a construction of "truss element" which is not consistent with the ordinary and customary understanding of that terminology in the art. Therefore, we reverse the Examiner's decision to reject claim 1 and claims 3, 4, and 6, which stand or fall with claim 1, under 35 U.S.C. § 102(a).

DECISION

The Examiner's decision is reversed as to claims 1-4 and 6.

REVERSED

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